

## REMARKS

In the Office Action mailed February 25, 2004, claims 1-12 were rejected under 35 U.S.C. 103(a) as being unpatentable over Naito (U.S. Patent No. 5,877,879) in view of Hirano et al. (U.S. Patent No. 6,522,821); claims 1-16 were rejected under 35 U.S.C. 103(a) as being unpatentable over Naito in view of Tanaka et al. (U.S. Patent No. 6,594,428); claims 14 and 16 were rejected under 35 U.S.C. 103(a) as being unpatentable over Naito in view of Tanaka and further in view of Terahara (U.S. Patent No. 6,271,945) or Fishman (U.S. Patent No. 5,930,414). The foregoing rejections are respectfully traversed.

Claims 1-12 are amended for clarification, unrelated to patentability. New claims 17-21 are added. No new matter is presented.

Claims 1-21 are pending and under consideration.

Naito discusses a plurality of post-compensators for chromatic dispersion  $44_1$  to  $44_n$  and the dispersion-shifted fiber in Col. 8, line 63 - Col. 9, line 3 and Col. 1, line 62 - Col. 2, line 4. More particularly, Naito discloses that a DCF (Dispersion Compensation Fiber) is provided for each channel at a transmitting terminal unit and a receiving terminal unit.

However, Naito's post-compensators  $44_1$  to  $44_n$  and the dispersion-shifted fiber are fixed dispersion compensators, and are not variable dispersion compensators. Therefore, Naito's post-compensators  $44_1$  to  $44_n$  and the dispersion-shifted fiber cannot perform accurate and adaptive chromatic dispersion.

Further, Naito's post-compensators  $44_1$  to  $44_n$  are provided for compensating chromatic dispersion for each channel. Therefore, a transmission system having Naito's post-compensators  $44_1$  to  $44_n$  would be larger than a transmission system having a variable dispersion compensator of the present invention.

Hirano discusses a dispersion slope compensator for compensating dispersion slope (100 and 200 of Fig.2A and Col. 9, lines 36-50). However, Hirano's dispersion slope compensator is a dispersion compensation fiber, whose dispersion is fixed, but is not a variable dispersion compensator. That is, Hirano discloses only the method of manufacturing the DCF for compensating fixed dispersion slope and does not disclose the present invention.

Tanaka discusses providing a dispersion slope compensator for compensating dispersion slope (Col. 1, lines 36-38 and lines 49-52, Col. 4, line 62 - Col. 5, line 2). However, Tanaka's dispersion slope compensator is a dispersion compensation fiber, whose dispersion is fixed, but is not a variable dispersion compensator. That is, Tanaka discloses only the method

of locating the DCF for compensating fixed dispersion slope and does not disclose the present invention.

Terahara discusses an apparatus and a method for controlling power levels of individual signal lights of a wavelength division multiples signal light, including a bandpass filter 94 of Figure 14.

Fishman discusses a method and apparatus for automatic compensation of first-order polarization mode dispersion, including a broadband electrical power detector 95 of Figure 2.

Naito in view of Hirano discusses fixed dispersion compensators having a dispersion compensator fiber whose dispersion is fixed.

Naito in view of Tanaka also discusses fixed dispersion compensators having a dispersion compensator fiber whose dispersion is fixed.

Naito in view of Tanaka, and further in view of Teraharra or Fishman discusses fixed dispersion compensators having a dispersion compensator fiber whose dispersion is fixed, and including a bandpass filter or a broadband electrical power detector.

In contrast to the foregoing references relied upon, the method of claim 1 includes "detecting chromatic dispersion related to at least one of the plurality of optical signals". Therefore, chromatic dispersion related to at least one of the plurality of optical signals, which changes according to a change in temperature of a transmission line and a secular change, is detected.

Naito does not disclose "detecting chromatic dispersion related to at least one of the plurality of optical signals" as recited in claim 1 of the present application. Therefore, by the disclosure of Naito, the chromatic dispersion related to at least one of the plurality of optical signals cannot be known.

The method of claim 1 includes "providing a variable dispersion compensator whose chromatic dispersion and dispersion slope are controlled so that said detected chromatic dispersion is reduced".

Therefore, by providing a variable dispersion compensator collectively for a WDM signal, a more compact transmission system having the variable dispersion compensator of claim 1 is provided than a transmission system having a variable dispersion compensator for each optical signal of each wave length of the WDM signal. Further, it is possible to perform accurate and adaptive dispersion compensator according to the change in temperature of a transmission line and the secular change.

Independent claims 7, 13, and 15 of the present application recite features similar to the above-mentioned features recited in claim 1.

Dependent claims 2-6, 8-12, 14, and 15-21 recite patentably distinguishing features of their own.

The Examiner's assertions related to the rejection of claim 2 are respectfully traversed, because Naito's opto/electrical converters 46<sub>1</sub> to 46<sub>n</sub> of Fig. 17 and a detector of the power of a frequency modulated by a frequency modulator 18 n Fig. 6C are used in a general optical receiving unit and cannot detect chromatic dispersion such as the method of claim 1.

The Examiner's assertions related to rejection of claims 14 and 16 are respectfully traversed, because bandpass filter 94 and power sensor 96 in Fig. 14 of Terahara are provided for a stabilization of optical power level and do not relate to the chromatic dispersion compensator of claims 14 and 16.

Withdrawal of the foregoing rejections is respectfully requested.

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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